

STATE OF TENNESSEE DEPARTMENT OF HEALTH **ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Greg Denton

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley TDEC-WPC

Knoxville FO

3711 Middlebrook Pike Knoxville, TN 37921

K00003211 Lab ID:

Knoxville Regional Laboratory

Sampling Agency: TDEC: Division of Water Pollution Control

Billing Code:

327.34-20

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

Analytical Supervisor

K00003211001

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 2.1

Sampler Project Name: TVA ash spill

Project Site No.:

2

Station No.:

Date/Time Collected:

EMORY002.1RO 12/15/2009 09:53

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC

Billing Code: Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC

Priority Date:

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/16/2009				M Pattanayek	12/16/2009

Field Determinations

Dissolved Oxygen: 15.11

Chlorine, residual:

Conductivity:

Temperature:

7.74

35

8.35

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

TEST: ICP	ME	THOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	460	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME					
ANALYTE	RESULT	UNITS	MDL.	MQL	ANALYZED BY:	DATE
Aluminum	300	μg/L	6.4	10	M Pattanayek	12/18/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	23	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	. U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.36J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	0.39J	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.46J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	36	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.2	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.10J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	3.1J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211001

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 2.1

Sampler Project Name: TVA ash spill **Project Site No.:**

2

Station No.:

EMORY002.1RO

Date/Time Collected: Sampler's Name:

12/15/2009 09:53 **Brandy Long**

County:

ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

Billing Code: Send Report To: TDEC-WPC 327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:**

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

TEST: Mercury ABLALNOTE

Ken Hitchman

				-
METH	OD:	EPA	245.1	

Field Determinations

Dissolved Oxygen: 15.11

Chlorine, residual:

Conductivity:

Temperature:

7.74

35

8.35

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

ANALYIE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/21/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211002

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

12/16/2009

Sampler Project Name: TVA ash spill

2B

Project Site No.: Station No.:

Date/Time Collected:

EMORY001.9RO 12/15/2009 10:05

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency: Billing Code:

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC

Priority Date:

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Digestion Metals

Ken Hitchman

TEST: Digestion Metals	MET	THOD: EPA 20	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE

Field Determinations

Dissolved Oxygen: 15.46

Chlorine, residual:

Conductivity:

Temperature:

pH:

Other:

Flow:

7.19

35

8.05

M Pattanayek

pH Units

uMHO

mg/L

CFS

12/16/2009

TEST: ICP	MET	ΓHOD: EPA 20	0.7			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	410	μg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	MET	ΓHOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	340	μg/L	6.4	10	M Pattanayek	12/18/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	1.8J	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	25	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	. U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.39J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	0.45J	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.56J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	35	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.3	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.075J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	3.0J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211002

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

Sampler Project Name: TVA ash spill

Project Site No.:

2B

Station No.:

EMORY001.9RO

Date/Time Collected:

12/15/2009 10:05

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: TDEC-WPC TDEC-WPC 12/31/2009

Priority Date: Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Mercury	METHOD: EPA 245.1					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/21/2009

Field Determinations

Dissolved Oxygen: 15.46

Chlorine, residual:

Conductivity:

Temperature:

7.19

35

8.05

pH Units

uMHO

mg/L

CFS

:Hq

Other:

Flow:

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211003

Project Name:

TVA-Ash Spill

Sample Description: Sampler Project Name: TVA ash spill

Date/Time Collected:

Emory River mile 1.7

Project Site No.:

3

Station No.:

EMORY001.7RO

Sampler's Name:

12/15/2009 10:16

County:

Brandy Long ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field Determinations

pH: 6.96

pH Units

Chlorine, residual: Conductivity:

34

uMHO

Temperature: Dissolved Oxygen: 15.38

8.02

mg/L

Other:

Flow: **CFS**

TEST: Digestion Metals	Digestion Metals METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/16/2009				M Pattanayek	12/16/2009

TEST: ICP	ICP METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	480	μg/L	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	ME	METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	350	μg/L	6.4	10	M Pattanayek	12/18/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	1.3J	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	26	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.41J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	U	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.55J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	40	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.3	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.062J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	2.9J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211003

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA ash spill **Project Site No.:**

3

Station No.:

EMORY001.7RO

Date/Time Collected: Sampler's Name:

12/15/2009 10:16

County:

Brandy Long ROANE - 73

Sample Matrix:

EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC 12/31/2009

Priority Date: Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Mercury METHOD: EPA 245.1 MDL MQL ANALYZED BY: **ANALYTE** RESULT UNITS DATE Mercury 0.090J μg/L 0.029 0.2 M Pattanayek 12/21/2009

Field Determinations

Dissolved Oxygen: 15.38

Chlorine, residual:

Conductivity:

Temperature:

6.96

34

8.02

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211004 TVA-Ash Spill

Project Name: Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA ash spill

Project Site No.:

4

Station No.:

Date/Time Collected: Sampler's Name:

EMORY000.1RO 12/15/2009 10:26

County:

Brandy Long ROANE - 73

Sample Matrix: EFO:

Water Knoxville

Sampling Agency: **Billing Code:** Send Report To:

TDEC-WPC 327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:**

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field	Determinations
nH·	7.08

Chlorine, residual:

Conductivity:

34

uMHO

pH Units

Temperature:

7.95 Dissolved Oxygen: 15.14

mg/L

Other:

Flow: **CFS**

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/16/2009				M Pattanayek	12/16/2009

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	580	μg/L	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	ME.	THOD: EPA 20	0.8		-	
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	470	µg/L	6.4	10	M Pattanayek	12/21/2009
Antimony	U	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	1.1J	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	26	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.45J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	0.61J	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.67J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	37	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.3	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.052J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	3.1J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211004

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.:

EMORY000.1RO

Date/Time Collected:

12/15/2009 10:26

Sampler's Name: County:

Brandy Long

Sample Matrix:

ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC

Send Report To: Agency Invoiced:

327.34-20 TDEC-WPC TDEC-WPC

Priority Date:

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Mercury	METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	U	μg/L	0.029	0.2	M Pattanayek	12/21/2009	

Field Determinations

Dissolved Oxygen: 15.14

Chlorine, residual:

Conductivity:

Temperature:

pH:

Other:

Flow:

7.08

34

7.95

pH Units

uMHO

mg/L

CFS

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211005

Project Name:

TVA-Ash Spill

Sample Description: Sampler Project Name: TVA ash spill

Clinch River mile 2.3

Project Site No.:

5

Station No.:

CLINC002.3RO

Date/Time Collected: Sampler's Name:

12/15/2009 10:44

County:

Brandy Long ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville

Billing Code: Send Report To: TDEC-WPC 327.34-20 TDEC-WPC

Agency Invoiced: **Priority Date:**

TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field Determinations

pH:

7.58

pH Units

Chlorine, residual:

Conductivity:

146 9.16 uMHO

Temperature: Dissolved Oxygen: 12.91

mg/L

CFS

Other:

Flow:

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	ANALYZED BY:	DATE			
Digestion Metals	12/16/2009				M Pattanayek	12/16/2009

TEST: ICP METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	520	µg/L	2.9	10	A Bass	12/29/2009

TEST: ICP-MS	ME	THOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	280	μg/L	6.4	10	M Pattanayek	12/21/2009
Antimony	U ·	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	31	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.36J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	0.48J	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.69J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	61	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.3	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.035J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	2.7J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211005

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River mile 2.3

Sampler Project Name: TVA ash spill

Project Site No.:

5

Station No.:

CLINC002.3RO

Date/Time Collected:

12/15/2009 10:44

Sampler's Name: County:

Brandy Long

Sample Matrix:

ROANE - 73

EFO:

Water Knoxville

Sampling Agency: **Billing Code:**

TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009

Received By:

Ken Hitchman

14:00

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TEST: Merc			METHOD EDA	
LIESI. MEIG	ury		METHOD: EPA	245.1
				
A A L A L A CO				

MDL ANALYTE RESULT UNITS MQL **ANALYZED BY:** DATE U Mercury μg/L 0.029 0.2 M Pattanayek 12/21/2009

Field Determinations

Dissolved Oxygen: 12.91

Chlorine, residual:

Conductivity:

Temperature:

7.58

146

9.16

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211006

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River TVA Discharge Point

Sampler Project Name: TVA ash spill

Project Site No.:

5A

Station No.:

KingAshOutF2

Date/Time Collected:

12/15/2009 10:50

Sampler's Name: County:

Brandy Long **ROANE - 73**

Sample Matrix: EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20 TDEC-WPC

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field Determinations 7.68 pH:

Chlorine, residual:

Conductivity:

47 **uMHQ**

Temperature: 6.83

Other:

Dissolved Oxygen: 16.79

mg/L

pH Units

Flow:

CFS

TEST: Digestion Metals	METHOD: EPA 200.2					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	12/16/2009				M Pattanayek	12/16/2009

TEST: ICP	METHOD: EPA 200.7						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Iron	440	μg/L	2.9	10	A Bass	12/29/2009	

TEST: ICP-MS	ME	ΓHOD: EPA 20	0.8			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	300	μg/L	6.4	10	M Pattanayek	12/21/2009
Antimony	0.55J	μg/L	0.33	1	M Pattanayek	12/18/2009
Arsenic	5.1	μg/L	0.93	5	M Pattanayek	12/18/2009
Barium	33	μg/L	2.5	5	M Pattanayek	12/18/2009
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009
Cobalt	0.36J	μg/L	0.04	1	M Pattanayek	12/18/2009
Copper	1.4	μg/L	0.38	1	M Pattanayek	12/18/2009
Lead	0.51J	μg/L	0.10	1	M Pattanayek	12/18/2009
Manganese	47	μg/L	0.42	1	M Pattanayek	12/18/2009
Nickel	1.2	μg/L	0.25	1	M Pattanayek	12/18/2009
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009
Thallium	0.079J	μg/L	0.03	1	M Pattanayek	12/18/2009
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009
Zinc	3.1J	μg/L	1.9	5	M Pattanayek	12/18/2009

K00003211006

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River TVA Discharge Point

Project Site No.:

Sampler Project Name: TVA ash spill

5A

Station No.:

KingAshOutF2

Date/Time Collected: Sampler's Name:

12/15/2009 10:50

County:

Brandy Long **ROANE - 73**

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC 327.34-20

Billing Code: Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC 12/31/2009

Priority Date: Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

:Hq	7.68	pH Units
Chlorine, residual	l:	•
Conductivity:	47	uMHO

Temperature: 6.83

Field Determinations

Dissolved Oxygen: 16.79

Other:

Flow: CFS

mg/L

TEST: Mercury	METHOD: EPA 245.1							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE		
Mercury	0.034J	μg/L	0.029	0.2	M Pattanayek	12/21/2009		

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211007

Project Name:

TVA-Ash Spill

Sample Description: Sampler Project Name: TVA ash spill

Clinch River mile 4.5 near Sugar Grove Valley R Chlorine, residual:

Field Determinations

Dissolved Oxygen: 12.25

Conductivity:

Temperature:

pH:

Other:

Flow:

7.64

182

9.68

pH Units

uMHO

mg/L

CFS

Project Site No.:

Station No.:

CLINC004.5RO

Date/Time Collected:

12/15/2009 10:33

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC TDEC-WPC

Date/Time Received:

12/31/2009 12/15/2009

Received By:

14:00

Ken Hitchman

TEST: Digestion Metals	METHOD: EPA 200.2

MQL MDL ANALYZED BY: DATE **ANALYTE** RESULT UNITS 12/16/2009 12/16/2009 M Pattanayek **Digestion Metals**

TEST: ICP METHOD: EPA 200.7 MDL MQL ANALYZED BY: DATE **RESULT** UNITS **ANALYTE** 590 2.9 10 A Bass 12/29/2009 μg/L Iron

TEST: ICP-MS METHOD: EPA 200.8							
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Aluminum	330	μg/L	6.4	10	M Pattanayek	12/21/2009	
Antimony	U	μg/L	0.33	1	M Pattanayek	12/18/2009	
Arsenic	U	μg/L	0.93	5	M Pattanayek	12/18/2009	
Barium	34	μg/L	2.5	5	M Pattanayek	12/18/2009	
Beryllium	U	μg/L	0.11	1	M Pattanayek	12/18/2009	
Cadmium	U	μg/L	0.41	1	M Pattanayek	12/18/2009	
Chromium	U	μg/L	2.0	5	M Pattanayek	12/18/2009	
Cobalt	0.37J	µg/L	0.04	1	M Pattanayek	12/18/2009	
Copper	U	μg/L	0.38	1	M Pattanayek	12/18/2009	
Lead	0.67J	μg/L	0.10	1	M Pattanayek	12/18/2009	
Manganese	60	μg/L	0.42	1	M Pattanayek	12/18/2009	
Nickel	1.4	μg/L	0.25	1	M Pattanayek	12/18/2009	
Selenium	U	μg/L	1.3	5	M Pattanayek	12/18/2009	
Silver	U	μg/L	0.03	0.25	M Pattanayek	12/18/2009	
Thallium	U	μg/L	0.03	1	M Pattanayek	12/18/2009	
Vanadium	U	μg/L	3.4	5	M Pattanayek	12/18/2009	
Zinc	2.8J	μg/L	1.9	5	M Pattanayek	12/18/2009	

K00003211007

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River mile 4.5 near Sugar Grove Valley R

Field Determinations

Dissolved Oxygen: 12.25

Chlorine, residual:

Conductivity:

Temperature:

7.64

182

9.68

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

Sampler Project Name: TVA ash spill **Project Site No.:**

Station No.:

CLINC004.5RO

Date/Time Collected:

12/15/2009 10:33

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

Water

EFO:

Knoxville

Sampling Agency: **Billing Code:**

TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Mercury	ST: Mercury METHOD: EPA 245.1						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Mercury	Ų	μg/L	0.029	0.2	M Pattanayek	12/21/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit



STATE OF TENNESSEE **DEPARTMENT OF HEALTH ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL Lab Services - Jackson Regional Lab Jackson, TN 38301 731-426-0686

TDH: Lab Services KRL Lab Services - Knoxville Regional Lab Knoxville, TN 37920 865-549-5201

TDH: Lab Services NCL Lab Services - Nashville Central Lab Nashville, TN 37243 615-262-6300

Sent To:

Greg Denton

TDEC-WPC

6th Floor, L & C Tower Annex

401 Church Street

Nashville, TN 37243-1534

Michael Atchley TDEC-WPC

Knoxville FO

3711 Middlebrook Pike

Knoxville, TN 37921

Lab ID: K00003211

Knoxville Regional Laboratory

Sampling Agency: TDEC: Division of Water Pollution Control

Billing Code:

327.34-20

This is to certify that the following results were determined using good laboratory pratices and in accordance with federal or state approved methodologies.

nalytical Supervisor

K00003211001 **Project Name:**

TVA-Ash Spill

Sample Description:

Date/Time Collected:

Emory River mile 2.1

Sampler Project Name: TVA ash spill

Project Site No.:

2

Station No.:

EMORY002.1RO 12/15/2009 09:53

Sampler's Name: County:

Brandy Long ROANE - 73

Sample Matrix:

Water

EFO: Sampling Agency: Knoxville TDEC-WPC

Billing Code: Send Report To: Agency Invoiced: 327.34-20 TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Priority Date:

Ken Hitchman

TEST: Alkalinity, Total	ME ⁻	THOD: EPA 31	0.2			
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	11	mg/L	3.8	10	M Chen	12/22/2009

Field Determinations

Dissolved Oxygen: 15.11

Chlorine, residual:

Conductivity:

Temperature:

7.74

35

8.35

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Calcium hardness	12	mg/L	0.7	1	M Chen	12/21/2009	

TEST: Residue, Settleable	METHOD: SM 2540F						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009	

TEST: Residue, Suspended	METHOD: SM 2540D						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Suspended Solids	13	mg/L	10	10	A Peeples	12/18/2009	

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211002

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 1.9 at underwater weir

Sampler Project Name: TVA ash spill

Date/Time Collected:

Project Site No.:

2B

Station No.:

EMORY001.9RO 12/15/2009 10:05

Sampler's Name:

Brandy Long

County: Sample Matrix: ROANE - 73

Water

Billing Code: Send Report To:

327.34-20 TDEC-WPC TDEC-WPC

Agency Invoiced: **Priority Date:**

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

EFO:	Knoxville	•
Sampling Agency:	TDEC-WPC	

Field Determinations

Dissolved Oxygen: 15.46

Chlorine, residual:

Conductivity:

Temperature:

7.19

35

8.05

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

TEST: Alkalinity, Total	alinity, Total METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	12	mg/L	3.8	10	M Chen	12/22/2009	

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	12	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	ME	-				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	ME:	THOD: SM 254			****	
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	23	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211003

Project Name:

TVA-Ash Spill

Sample Description:

Emory River mile 1.7

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.: Date/Time Collected: EMORY001.7RO 12/15/2009 10:16

Sampler's Name:

Brandy Long ROANE - 73

County: Sample Matrix:

EFO:

Water

Sampling Agency:

Knoxville TDEC-WPC 327.34-20

Billing Code: Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC

Priority Date: Date/Time Received: 12/31/2009

Received By:

12/15/2009 14:00

Ken Hitchman

Field Determinations

:Hq

6.96

pH Units

Chlorine, residual:

Conductivity:

34

uMHO

Temperature:

8.02

Dissolved Oxygen: 15.38

mg/L

Other:

Flow:

CFS

TEST: Alkalinity, Total	ME.			· · · · · · · · · · · · · · · · · · ·		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	12	mg/L	3.8	10	M Chen	12/22/2009

TEST: Hardness, Calcium	ME	METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	12	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	METHOD: SM 2540F					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	25	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

Lab-Sample Number: **Project Name:**

K00003211004 TVA-Ash Spill

Sample Description:

Emory River mile 0.1

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.: Date/Time Collected: EMORY000.1RO 12/15/2009 10:26

Sampler's Name: County:

Brandy Long **ROANE - 73**

Sample Matrix:

Water

EFO:

Knoxville

Sampling Agency: **Billing Code:**

TDEC-WPC 327.34-20

Send Report To: Agency Invoiced: **Priority Date:**

TDEC-WPC **TDEC-WPC** 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field Determinations 7.08

pH:

Chlorine, residual:

34

uMHO

pH Units

Conductivity: Temperature:

7.95

mg/L

Dissolved Oxygen: 15.14 Other:

Flow:

CFS

TEST: Alkalinity, Total	ME.					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	11	mg/L	3.8	10	M Chen	12/22/2009

TEST: Hardness, Calcium	WE					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	12	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	ME			71		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	ME:	····				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	27	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211005

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River mile 2.3

Sampler Project Name: TVA ash spill

Project Site No.:

Station No.:

CLINC002.3RO

Date/Time Collected:

12/15/2009 10:44

Sampler's Name:

Brandy Long

County:

ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency:

Knoxville

Billing Code:

TDEC-WPC 327.34-20

Send Report To: **Agency Invoiced:** TDEC-WPC TDEC-WPC

Priority Date:

12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

Field Determinations

pH:

7.58

146

pH Units

Chlorine, residual:

Conductivity: Temperature:

9.16

uMHO

Dissolved Oxygen: 12.91

mg/L

Other:

Flow:

CFS

TEST: Alkalinity, Total	METHOD: EPA 310.2						
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE	
Total Alkalinity	77	mg/L	3.8	10	M Chen	12/22/2009	

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	60	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	WE.	THOD: SM 254				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	24	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

K00003211006

Project Name:

TVA-Ash Spill

Sample Description:

Clinch River TVA Discharge Point

Sampler Project Name: TVA ash spill

Project Site No.:

5A

Station No.:

KingAshOutF2

Date/Time Collected: Sampler's Name:

12/15/2009 10:50

County:

Brandy Long ROANE - 73

Sample Matrix: EFO:

Water

Sampling Agency: **Billing Code:**

Knoxville TDEC-WPC 327.34-20

Send Report To: Agency Invoiced:

TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Priority Date:

Ken Hitchman

Field Determinations pH: 7.68

Chlorine, residual:

47

uMHO

pH Units

Conductivity:

Temperature: 6.83 Dissolved Oxygen: 16.79

mg/L

Other: Flow:

CFS

TEST: Alkalinity, Total	ME:	THOD: EPA 31				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	14	mg/L	3.8	10	M Chen	12/22/2009

TEST: Hardness, Calcium	METHOD: SM 3500-Ca D					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	18	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	METHOD: SM 2540F					. *
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	17	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

Lab-Sample Number: **Project Name:**

K00003211007

TVA-Ash Spill

Clinch River mile 4.5 near Sugar Grove Valley F Chlorine, residual:

Field Determinations

Dissolved Oxygen: 12.25

Conductivity:

Temperature:

7.64

182

9.68

pH Units

uMHO

mg/L

CFS

pH:

Other:

Flow:

Sample Description: Sampler Project Name: TVA ash spill

Project Site No.:

Station No.: CLINC004.5RO Date/Time Collected:

Sampler's Name:

12/15/2009 10:33 Brandy Long

County: Sample Matrix:

Billing Code:

Priority Date:

ROANE - 73

EFO:

Water Knoxville TDEC-WPC

Send Report To: **Agency Invoiced:**

Sampling Agency:

327.34-20 TDEC-WPC TDEC-WPC 12/31/2009

Date/Time Received:

12/15/2009 14:00

Received By:

Ken Hitchman

TEST: Alkalinity, Total	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	100	mg/L	3.8	10	M Chen	12/22/2009

TEST: Hardness, Calcium ANALYTE	ME	THOD: SM 350				
	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	78	mg/L	0.7	1	M Chen	12/21/2009

TEST: Residue, Settleable	ME.			· · · · · · · · · · · · · · · · · · ·		
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	P Leathers	12/16/2009

TEST: Residue, Suspended	ME					
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peeples	12/18/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit